

September 24th, 1947

Professor W. W. Palmer,  
Public Health Research Institute,  
Foot of East 15th Street,  
New York 9, New York

Dear Bill,

While at the Rockefeller Institute for Medical Research I assisted in the synthesis of Tryparsamide, still probably the best remedy against African sleeping sickness and still used in the care of neurosyphilis, developed the first practical method for the isolation of crystalline oxyhemoglobin, the blood pigment, without loss of its oxygen-carrying capacity, and, with O. T. Avery, discovered the large class of immunologically specific polysaccharides, so important in the invasive behavior of many pathogenic bacteria and in the immune response they engender. From 1927-8 I was Chemist to the Mt. Sinai Hospital, New York, and reorganized and modernized its clinical chemical division.

From 1928, as a member of (your department,) I have been studying the mechanisms of immunity. This <sup>study</sup> included not only the separation and isolation of the various antigenic components of agents of infectious disease, such as hemolytic streptococci and tubercle bacilli, but also the action of these products on the animal organism with respect to antibody formation and immunity. At the start of my work here, there were no methods for the measurement of antibodies in weight units, or absolute terms, so that there was no idea of how much actual antibody might be present in any therapeutic or immune serum. By application of the rigorous quantitative methods of analytical chemistry it was possible to devise such methods and eventually to refine them so that now even as little as one microgram of antibody nitrogen may be fairly accurately measured in a sample of serum from an animal or human being. With these methods it was possible to study the interaction of antigens with antibodies, to develop a quantitative theory of their combination based on chemical laws, and to make predictions from the theory which resulted in the isolation of 100% pure antibody and its final recognition as a modified serum globulin of definite molecular size. Much of the mystery surrounding complement, so important an aid in immunity and in diagnostic tests, was also removed by showing that this, too, could be estimated in weight units and its behavior accounted for under the same quantitative theory. Recently, new, exact methods for the estimation, use, and study of complement have been worked out and the knowledge of this material is steadily advancing. During the war, on the basis of analyses of the sera of volunteers at the Medical School, a field test of the value of purified pneumococcal polysaccharides in the prevention of pneumonia was recommended, carried out, and proven highly successful. As a result, this material is now available to the general public.

September 24, 1947

As you may recall, I was elected to the National Academy of Sciences in 1942, was invited to a Professorship of Immunochemistry in the Medical School of the University of Wisconsin in 1946, participated with a lecture "Immunité" in the 50th Anniversary Celebration of the Death of Pasteur in Paris in November 1947, at the invitation of the French Government, was given the degree of M.D. honoris causa, at the demi-millennium of the University of Bordeaux in May, 1947, and have just been asked by the British Medical Research Council to organize and direct a large and comprehensive Institute of Immunology near London, where chemists, physicists, bacteriologists, immunologists and biologists might work together.

I hate to get off such a blast of my own horn, but you asked for it.

Yours,

MH:jm

Michael Heidelberger